



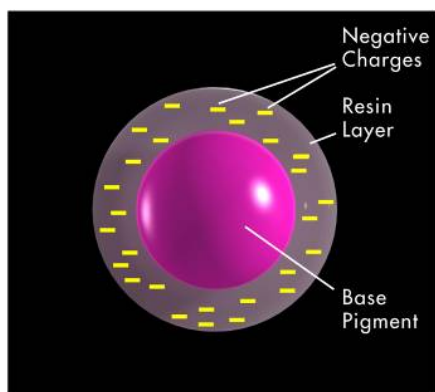
HP Designjet Z2100 and Z3100 Printers Deliver Professional Quality, Durable Prints



The HP Designjet Z2100 and Z3100 printers use new HP 70 Viverra Pigment Inks to deliver superb imaging performance, fade resistance, and durability that meet the needs of professional photographers, graphic artists, and pre-press professionals.

HP 70 Viverra Pigment Inks and Printheads

HP Viverra Pigment Inks offer an unmatched combination of outstanding image quality and exceptional light fade resistance on a wide variety of photo and fine art media. Designed together as a system, prints produced with original HP Viverra Pigment Inks on a range of HP creative and specialty media are water resistant and resist fading for over 200 years.¹



Not drawn to scale

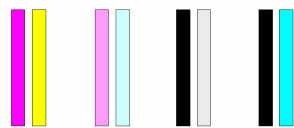
HP's proprietary Electrosteric Encapsulation Technology (EET) optimizes the pigment chemistry and ink properties. Each pigment particle is encapsulated in a resin layer. Negative electrostatic charges within the resin layer produce a repulsion force between particles to minimize aggregation in the printer and on the print, so the pigments form a smooth layer on photo papers to deliver excellent gloss uniformity. HP Viverra Pigment Inks with EET provide a stable suspension of pigment particles in the ink cartridge, ink delivery system, and printheads. This ensures reliable operation, high image quality, and enhanced shelf and operational life.

¹ See the User's Guide for information on paper water resistance. Fade resistance based on internal HP lightfade testing on a range of HP creative and specialty media; confirmation tests in progress at Wilhelm Imaging Research, Inc. For details, see www.hp.com/go/supplies/printpermanence.

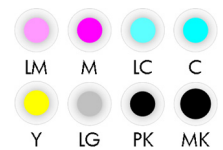


Each HP 70 Printhead in the new Designjet Z2100 and Z3100 uses 2,112 ultra-small, precision nozzles to eject drops of ink that produce grain-free images with smooth color transitions. This presents a challenge for pigment ink formulations, because the nozzles are so tiny that less than 100 pigment particles could fit across the nozzle diameter. At this micron-scale, the flow of inks with pigments becomes very complex. With HP EET, pigments flow freely through the nozzles forming drops with the precise volumes and speeds required to produce professional image quality.

8-ink Pigment System with HP Three-Black Ink Set



HP's 8-ink pigment system offers a wide color gamut on photo and fine art papers. With matte and photo black inks together in the printer you can print on matte fine art and glossy photo papers without swapping inks or needing to plan ahead to minimize setup time and ink waste.



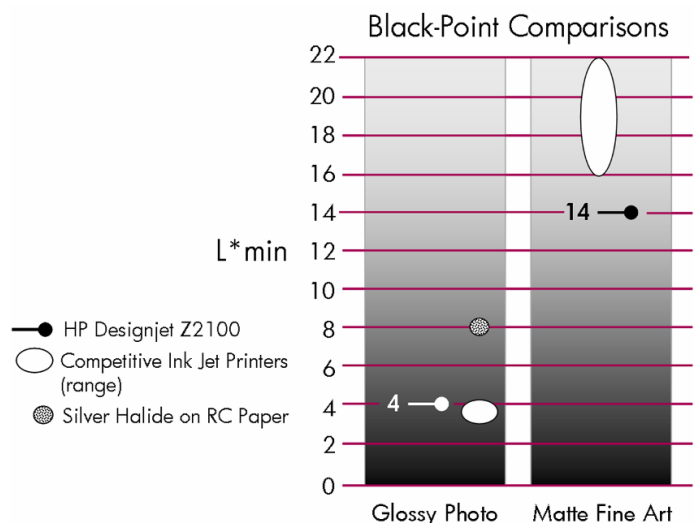
Using four HP 70 Printheads each printing two colors of ink with 1,056 nozzles per color, and with a wide print swath of

0.85 inches, the HP Designjet Z2100 can produce an A1 print in about 5½ minutes in Normal Mode.

Together with HP 70 Light Gray, HP 70 Matte Black and HP 70 Photo Black Inks print B&W and color images with low-grain, true neutral tones, and rich, deep blacks.

HP 70 Photo Black Ink in the HP Designjet Z2100 achieves a minimum L^* of 4 ($D_{max} = 2.37$) on glossy photo paper² that significantly exceeds the black point of silver halide prints on RC paper. HP 70 Matte Black and HP 70 Photo Black Inks together deliver an outstanding minimum L^* of 14 ($D_{max} = 1.77$) on matte fine art media.³

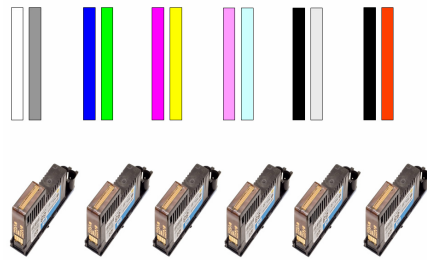
With HP Vivara Pigment Inks, you can produce prints with outstanding image quality and exceptional fade resistance and water resistance.



² Measured on HP Premium Instant-Dry Gloss Photo Paper using HP 70 Photo Black ink.

³ Measured on HP Hahnemühle Smooth Fine Art Paper using HP 70 Photo Black and HP 70 Matte Black inks.

12-ink Pigment System with HP Quad-Black Ink Set and Gloss Enhancer



The HP Designjet Z3100 uses twelve Vivera Pigment Inks including seven colors, four blacks, and a gloss enhancer. These inks deliver an exceptionally broad color gamut for photographic and graphic arts applications, superb neutral tones, and deep blacks on matte fine art as well as glossy and semi-gloss photo papers. Prints display uniform gloss on glossy and semi-gloss photo papers without the need for



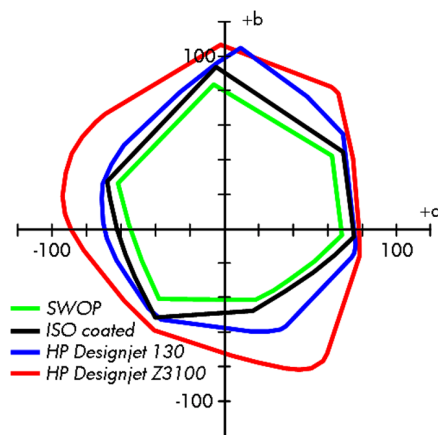
film, liquid, or spray lamination and offer more than 200 years fade resistance on a range of HP creative and specialty media.⁴

The HP Designjet Z3100 uses six HP 70 Printheads.

HP's Multichrome Ink set prints reds, greens, and blues directly with HP 70 Red, Green, and Blue Inks. This extends the color gamut and can reduce ink use for these important colors. In addition, color accuracy is improved and metamerism is significantly reduced.



The HP Designjet Z3100 uses a single cyan ink, HP 70 Light Cyan. This ink has a drop weight and pigment load that has been optimized to give both grain-free cyan highlights and saturated cyan with low metamerism.⁵ HP 70 Blue and HP 70 Green Inks produce saturated blues and greens without the need for a "dark" cyan ink. Fine control over reds is obtained with HP Red Ink and HP 70 Light Magenta and HP 70 Magenta combined with HP 70 Yellow Inks.



The HP Designjet Z3100 provides complete coverage of both SWOP and ISO coated gamuts when printing on HP Proofing Papers⁶ for color accuracy in pre-press applications. Extended coverage in reds, greens and blues delivers a large color gamut for superb color reproduction.

The gamut chart compares coverage in the a-b plane of the CIE Lab color space: SWOP (green), ISO coated (black), HP Designjet 130 (blue), HP Designjet Z3100 (red). For graphic arts applications, the HP Designjet Z3100 can colorimetrically reproduce 84% of PANTONE® colors.⁷

HP Designjet Z3100 Gamut Compared to HP Designjet 130, SWOP, and ISO coated

The four pigment black HP 70 inks include light and medium grays, a photo black, and a matte black. The HP Quad-Black Ink set offers exceptional highlight and shadow detail and virtually invisible grain in B&W photos. With four black inks on-board, images on matte fine art papers and glossy photo media can be printed without swapping ink cartridges and without wasting time and ink to reconfigure the printer.



HP 70 black inks deliver accurate gray tones over the entire range from white to black. Because these inks are neutral, HP 70 Light Gray, HP 70 Gray, and HP 70 Photo Black Inks produce

⁴ Based on internal HP lightfade testing on a range of HP creative and specialty media; confirmation tests in progress at Wilhelm Imaging Research, Inc. For details, see www.hp.com/go/supplies/printpermanence.

⁵ Colors equivalent to a "dark" cyan ink are obtained by printing HP 70 Light Cyan at high densities.

⁶ Results are obtained on HP Professional High Gloss Contract Proofing paper and HP Professional Semi-Gloss Contract Proofing paper. On these papers, the HP Designjet Z2100 also provides complete coverage of SWOP and ISO coated gamuts.

⁷ Preliminary HP internal test results on HP Professional High Gloss Contract Proofing paper. Final results available before October 2006.

spectacular B&W photos on glossy and semi-gloss photo media without using color inks that can cause color casts and metamerism.

HP 70 Photo Black Ink in the HP Designjet Z3100 achieves a minimum L^* of 3.5 ($D_{max} = 2.43$) on glossy photo paper⁸ that significantly exceeds the black point of silver halide prints on RC paper. HP 70 Matte Black and HP 70 Photo Black Inks together deliver an outstanding minimum L^* of 14 ($D_{max} = 1.77$) on matte fine art media.⁹

Pigment inks contain resins that form a thin coating that binds pigment particles to the paper's surface. The thickness, gloss, and transparency of this coating can depend on the colors and amounts of ink used. Printing with pigments on glossy and semi-gloss photo papers involves two effects that are not significant on matte media: gloss uniformity and "bronzing".

Obtaining uniform gloss on photo media is a challenge, because ink gloss in the midtones and shadows must match the paper's gloss in the highlights. Otherwise, white areas in the image might appear as dull or shiny patches at some angles of view.

Bronzing appears as an unwanted metallic luster and changes in perceived density and tone in a printed image. It is caused by interference between rays of light that reflect off the surface of the ink layer and others that pass through it to reflect off the ink-paper interface.

In the past, some photographers and graphic artists have eliminated both gloss uniformity and bronzing issues by laminating prints with a liquid or spray coating or displaying prints behind glass.

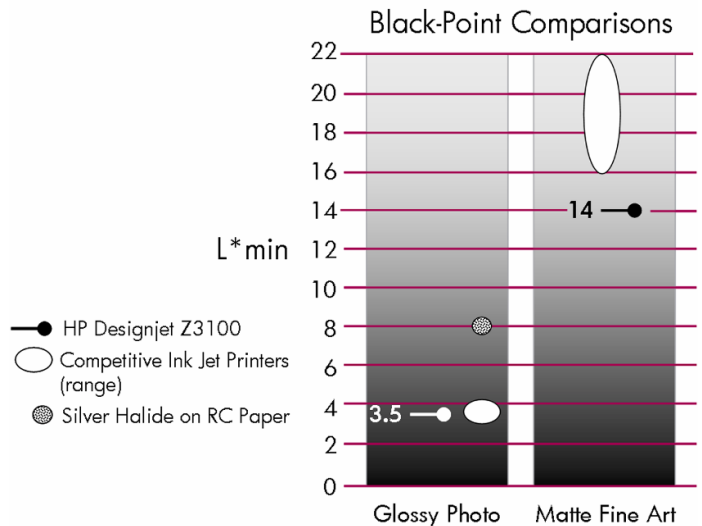
In HP's 8-ink Vivera pigment ink system for the HP Designjet Z2100, HP chose the resin, pigment loads, ink vehicle, and print modes to deliver excellent gloss uniformity and low bronzing on glossy and semi-gloss photo media without lamination. HP's 12-ink system for the HP Designjet Z3100 takes gloss uniformity and suppression of bronzing even further to meet the needs of the most demanding professional photographers.

HP's 12-ink system includes an important innovation, HP 70 Gloss Enhancer. It is used on glossy and semi-gloss photo media to produce images with uniform gloss from highlights to shadows, and eliminates bronzing as an image quality issue without the need for film, liquid, or spray lamination. The amount of HP 70 Gloss Enhancer used in each pixel depends on the color and amount of other inks. HP 70 Gloss Enhancer is not a liquid laminate or coating, and it is printed with other inks in toned regions and on paper white in the brightest highlights.

While other pigment inks can appear to be a coating on the surface of photo papers, HP's 12-ink system with HP 70 Photo Gloss produces a luminous image that appears to be in the paper, not on top of it. This gives prints a look much appreciated by professional photographers and their clients.

HP Multi-Color Separation Technology

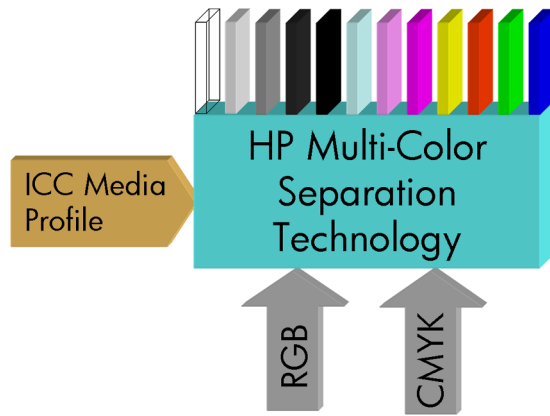
To produce professional-quality prints, it is simply not enough to offer more ink colors - it is how they are used together that's critical to producing the best images. Most printable colors can be matched by many different ink combinations. A method for separating CMYK or RGB inputs into 12 inks has a number of critical performance objectives. It must produce a wide and useful



⁸ Measured on HP Premium Instant-Dry Gloss Photo Paper using HP 70 Photo Black ink.

⁹ Measured on HP Hahnemühle Smooth Fine Art Paper using HP 70 Photo Black and HP 70 Matte Black inks.

gamut, smooth color transitions, uniform gloss, and minimize image grain. It must preserve highlight and shadow detail, offer excellent reproduction of grays, and reproduce skin tones that look natural at any level of brightness.



HP's color scientists working with professional photographers and graphic artists combined both the science and art of printing to meet these objectives. The result is HP Multi-Color Separation Technology, which determines the best combination among the 12 inks for each pixel.

HP Multi-Color Separation Technology enables a 12-ink printer to fit seamlessly into your workflow. To application software and RIPs, the HP Designjet Z3100 appears to be a CMYK or RGB device with a large gamut. You get the

color and B&W performance of HP's 12-ink system without manual editing of printer color profiles and without having to deal with the complexity of 12-color separations.

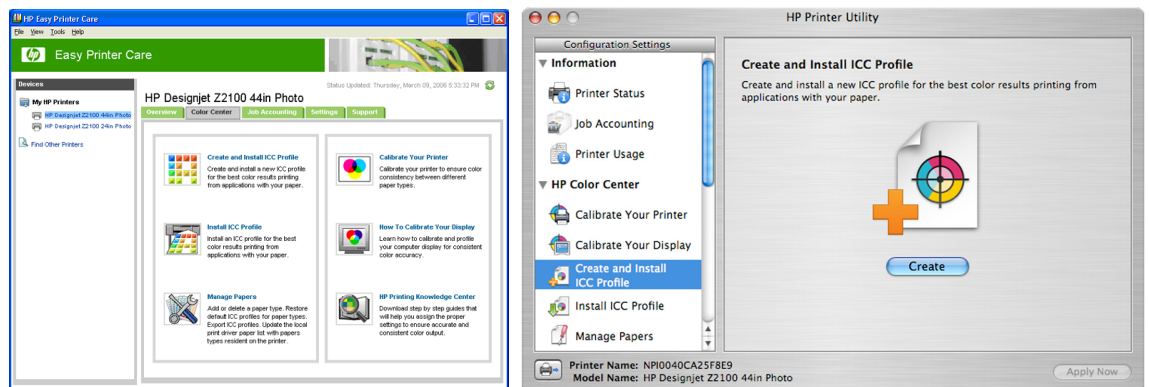
HP Multi-Color Separation Technology is also used with the HP Embedded Spectrophotometer with i1 Color Technology to generate custom ICC profiles for any photo paper or fine art media.

Extended and Fine Art Media Portfolio

HP offers a broad portfolio of 9 photo papers, 10 digital fine art papers, 3 proofing papers, 9 bond and coated papers, and more than 34 other commercially available media. These have been tested with HP 70 Vivera Pigment Inks and HP Designjet Z2100 and Z3100 printers to deliver superior imaging performance with the durability and permanence expected for commercial prints. Water-resistant prints offering 200+ years of fade resistance¹⁰ can be produced on a wide range of glossy and semi-gloss photo papers and matte fine art media.

Color Center

HP Designjet Z2100 and Z3100 printers offer exceptional ease-of-use with the Easy Printer Care interface for Windows and Mac platforms. One of the main features of HP Easy Printer Care is the Color Center. This screen offers color control from a single screen where you can automatically create custom ICC profiles for your favorite media using the HP Embedded Spectrophotometer with i1 Color Technology from GretagMacbeth™. From the Color Center, you can download and install ICC profiles, manage papers, calibrate your printer, and access on-line resources at the HP Printing Knowledge Center.



HP Color Center Interface for Windows (left) and Mac (right) Platforms

¹⁰ Fade resistance based on internal HP lightfade testing on a range of HP creative and specialty media; confirmation tests in progress at Wilhelm Imaging Research, Inc. For details, see www.hp.com/go/supplies/printpermanence.

HP Professional PANTONE® Emulation

With the largest coverage of PANTONE colors of any inkjet printer, you will be able to offer the most accurate spot-color proofing for logos and product packaging to corporate customers with your HP Designjet Z3100.

With HP Professional PANTONE® Emulation, PANTONE® color names can be assigned to graphical elements in designs, and ink values are specifically determined for your printer, inks, and print medium in an automatic process.¹¹

HP's Professional PANTONE® Emulation algorithm was designed in cooperation with professional graphic artists and pre-press professionals to mimic the choices they make when visually optimizing color matches.

¹¹ For HP Professional PANTONE® Emulation to work correctly, design applications must allow the assignment of the correct color name to design elements, and the name must be preserved intact in the PostScript or PDF file passed to a supported RIP with embedded HP Professional PANTONE® Emulation technology. Since ink values are calculated based on colorimetric information present in an ICC profile, a correct and up-to-date ICC profile is required for the specific printer, inks, and media being used.